

Übungen zum Unbestimmten Integral

Bestimmen Sie die nachfolgenden Unbestimmten Integrale!

1. $\int 3 \cdot \cos x \, dx =$

2. $\int e \cdot e^x \, dx =$

3. $\int \pi \cdot \sin x \, dx =$

4. $\int 15 \, dx =$

5. $\int 8x^3 \, dx =$

6. $\int 6x^2 + 4x - 3 \, dx =$

7. $\int 2x^2 - 6x - 12 \, dx =$

8. $\int \frac{1}{3}x^2 - \frac{1}{2}x + e^2 \, dx =$

9. $\int \frac{3}{x^3} \, dx =$

10. $\int \frac{5}{x} \, dx =$

11. $\int \frac{3x^2}{8x} \, dx =$

12. $\int \frac{3x+1}{2} \, dx =$

13. $\int \sqrt{x} \, dx =$

14. $\int \sqrt{x^3} \, dx =$

15. $\int \frac{4}{\sqrt{x}} \, dx =$

Lösungen zum Unbestimmten Integral

Hier sind die Lösungen der vorstehenden Aufgaben:

1. $\int 3 \cdot \cos x \, dx = 3 \cdot \sin x + c$
2. $\int e \cdot e^x \, dx = e \cdot e^x + c$
3. $\int \pi \cdot \sin x \, dx = -\pi \cdot \cos x + c$
4. $\int 15 \, dx = 15x + c$
5. $\int 8x^3 \, dx = 2x^4 + c$
6. $\int 6x^2 + 4x - 3 \, dx = 2x^3 + 2x^2 - 3x + c$
7. $\int 2x^2 - 6x - 12 \, dx = \frac{2}{3}x^3 - 3x^2 - 12x + c$
8. $\int \frac{1}{3}x^2 - \frac{1}{2}x + e^2 \, dx = \frac{1}{9}x^3 - \frac{1}{4}x^2 + e^2x + c$
9. $\int \frac{3}{x^3} \, dx = \int 3x^{-3} \, dx = \frac{3}{-2}x^{-2} + c = -\frac{3}{2x^2} + c$
10. $\int \frac{5}{x} \, dx = 5 \ln |x| + c$
11. $\int \frac{3x^2}{8x} \, dx = \int \frac{3x}{8} \, dx = \frac{3x^2}{16} + c$
12. $\int \frac{3x+1}{2} \, dx = \int \frac{3x}{2} + \frac{1}{2} = \frac{3x^2}{4} + \frac{x}{2} + c$
13. $\int \sqrt{x} \, dx = \int x^{\frac{1}{2}} \, dx = \frac{1}{\frac{3}{2}}x^{\frac{3}{2}} + c = \frac{2}{3}x^{\frac{3}{2}} + c = \frac{2\sqrt{x^3}}{3} + c$
14. $\int \sqrt{x^3} \, dx = \int x^{\frac{3}{2}} \, dx = \frac{1}{\frac{5}{2}}x^{\frac{5}{2}} + c = \frac{2}{5}x^{\frac{5}{2}} + c = \frac{2\sqrt{x^5}}{5} + c$
15. $\int \frac{4}{\sqrt{x}} \, dx = \int 4 \cdot x^{-\frac{1}{2}} \, dx = 4 \cdot \frac{x^{\frac{1}{2}}}{\frac{1}{2}} + c = 8 \cdot x^{\frac{1}{2}} + c = 8 \cdot \sqrt{x} + c$